

Centre Number						Candidate Number				
Surname										
Other Names										
Candidate Signature										

For Examiner's Use	
Examiner's Initials	
Question	Mark
1	
2	
3	
4	
5	
6	
TOTAL	



General Certificate of Education
Advanced Subsidiary Examination
January 2010

Environmental Studies

ENVS1

Unit 1 The Living Environment

Wednesday 13 January 2010 1.30 pm to 2.30 pm

You will need no other materials.
You may use a calculator.

Time allowed

- 1 hour

Instructions

- Use black ink or black ball-point pen.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Answers written in margins or on blank pages will not be marked.
- Do all rough work in this book. Cross through any work you do not want to be marked.

Information

- The marks for questions are shown in brackets.
- The maximum mark for this paper is 60.
Two of these marks are for the Quality of Written Communication.
- You will be marked on your ability to:
 - use good English
 - organise information clearly
 - use specialist vocabulary where appropriate.
- Question 5 (b) should be answered in continuous prose.
Quality of Written Communication will be assessed in this answer.

ENVS1



JAN10ENVS101

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ANSWER IN THE SPACES PROVIDED**



Answer **all** questions in the spaces provided.

1 The table describes some terms associated with land use.

Complete the table using the appropriate letter from the list.

- A** Time zoning
- B** Space zoning
- C** Green belt
- D** Environmental Stewardship Scheme
- E** Public Inquiry
- F** Leopold matrix
- G** National Trust
- H** DEFRA

Description	Letter
Method of preventing urban sprawl	
Non-Governmental Organisation involved with conservation and landscape management	
Allocation of separate areas of a lake for activities that would otherwise conflict	
System of grants to encourage sensitive farmland management	
Method of quantifying environmental impacts	

(5 marks)

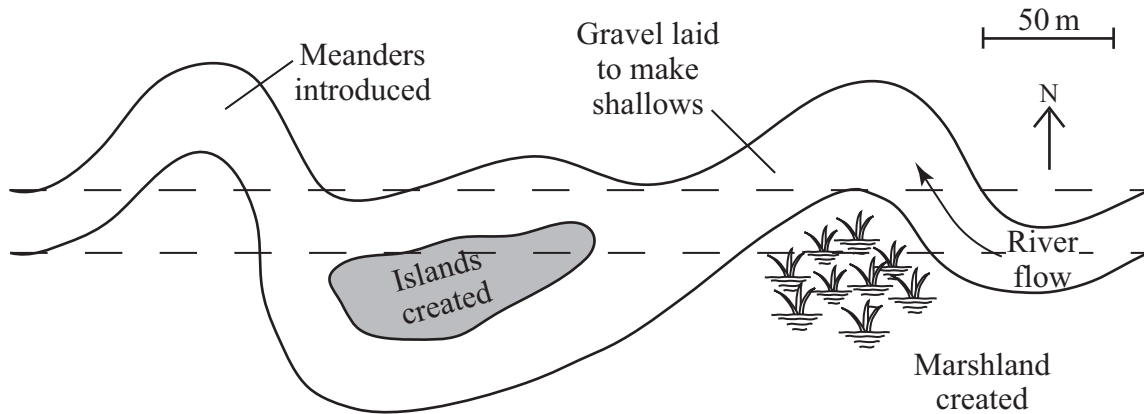
5

Turn over for the next question

Turn over ►



2 The diagram shows a river development project by a Local Authority to enhance the landscape.



Key

----- Original river course

~~~~~ New river course

2 (a) (i) Name a Governmental Organisation that may be consulted by the Local Authority for advice on the project.

.....  
 (1 mark)

2 (a) (ii) State a designation that the Local Authority may use to protect the area and to provide access for the public.

.....  
 (1 mark)



2 (b) (i) Describe how a cost benefit analysis may be used in the planning of this project.

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(2 marks)

2 (b) (ii) Explain how an Environmental Impact Assessment may be used in a development project.

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(2 marks)

2 (c) Suggest how landscape protection and enhancement may also result in wildlife conservation.

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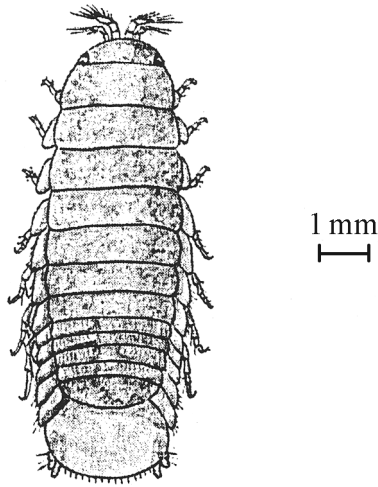
(4 marks)

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Turn over ►



3 The picture shows a gribble which is a crustacean in the family Limnoriidae. Gribbles bore into dead wood immersed in seawater.



3 (a) (i) Suggest why the presence of gribbles may be important to other species.

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(2 marks)



- 3 (a) (ii) Several species of gribble cause significant economic and structural damage to wooden ships and wooden structures in seawater.

The table shows some features of a harbour.

| Feature                                        | 1970        | 2005                                  |
|------------------------------------------------|-------------|---------------------------------------|
| Oxygen saturation of water / %                 | 11          | 47                                    |
| Suspended solids in water / $\text{mg l}^{-1}$ | 932         | 168                                   |
| Organic pollutants in water                    | very high   | medium                                |
| Inorganic pollutants in water                  | high        | medium                                |
| Volume of shipping / $10^3\text{t / yr}^{-1}$  | 5500        | 84 200                                |
| Extent of damage due to gribbles               | very little | nearly all submerged timbers affected |

Use the information in the table to suggest why gribble damage has increased from 1970 to 2005.

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(2 marks)

- 3 (a) (iii) Describe how the gribble population size in the harbour may be estimated.

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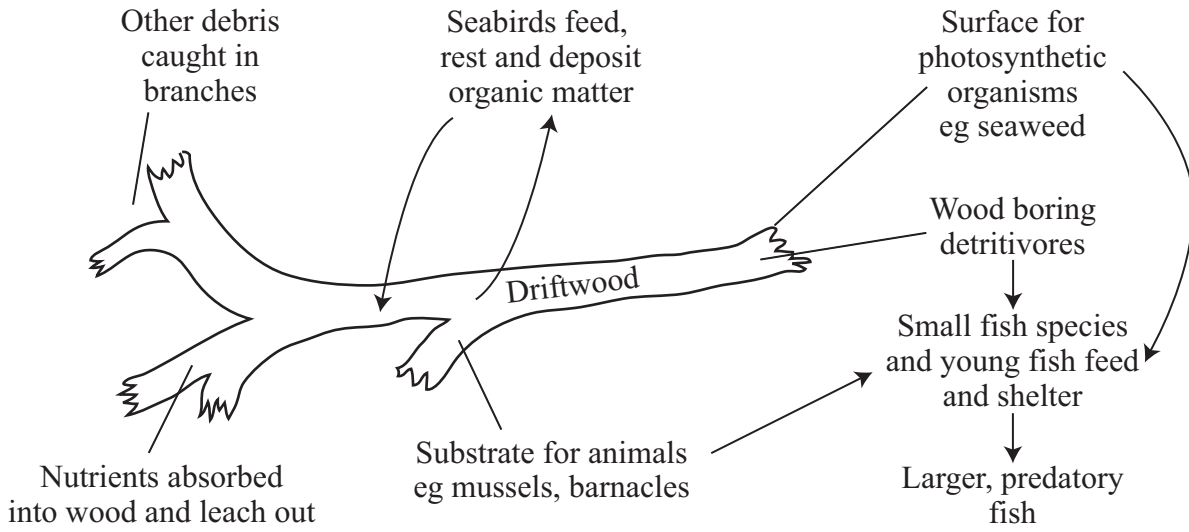
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(4 marks)

Turn over ►



3 (b) Driftwood floating in the sea has an important ecological role. The diagram shows some of the ecological relationships associated with driftwood.



Human activities have resulted in a significant reduction in driftwood.

Suggest why this may affect fish populations.

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(2 marks)





**Turn over for the next question**

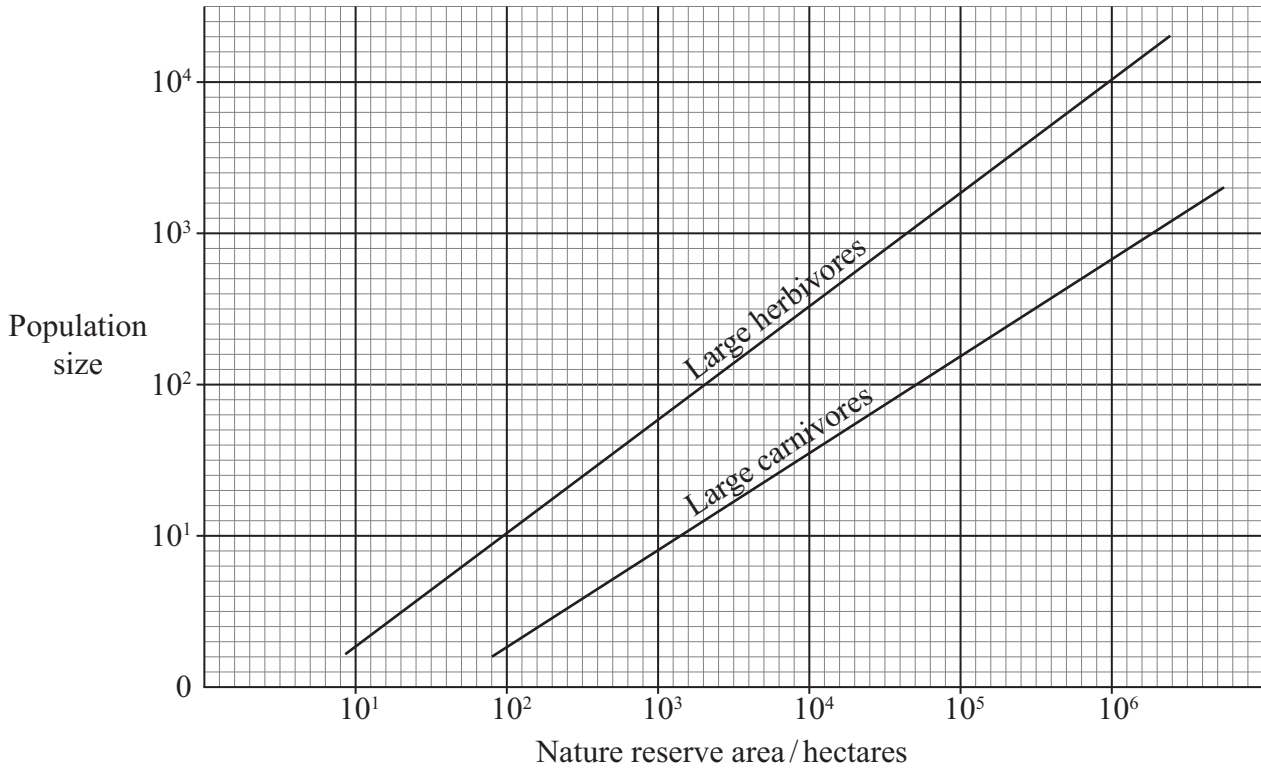
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4 Managers of wildlife conservation areas monitor the populations of important species, including large herbivores and carnivores.

4 (a) The graph shows the typical population size of animals in different sized nature reserves.



4 (a) (i) Explain why the population density of large carnivores is lower than that of large herbivores.

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(2 marks)



4 (a) (ii) Suggest how habitat management can increase the carrying capacity of a nature reserve.

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*(4 marks)*

4 (b) (i) Explain why having a small captive population may be a problem for breeding.

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*(2 marks)*

4 (b) (ii) Outline why animals bred in captivity may be less likely to survive in the wild.

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*(2 marks)*

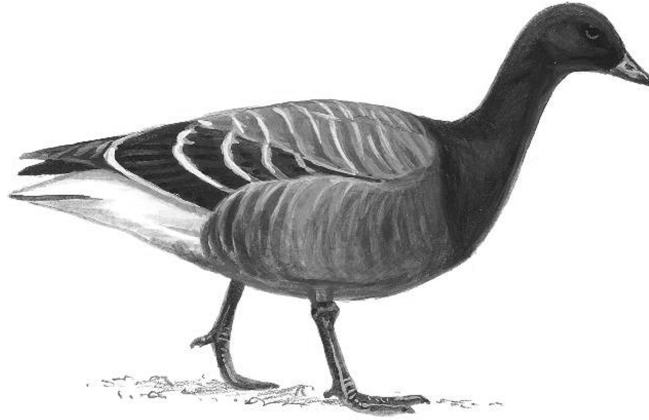
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5 Migrating birds may travel long distances from the areas in which they spend the winter to the areas where they breed.

The picture shows a Brent Goose, *Branta bernicla*. They are birds that mainly feed on eelgrass, *Zostera* spp, in estuaries.



Source of image: Mike Langman (rspb-images.com)

5 (a) (i) The eelgrass on which Brent geese feed is found only in certain estuaries because it has a narrow range of tolerance.

Explain what is meant by the *range of tolerance* of a species.

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(2 marks)



- 5 (a) (ii) Brent geese make a long migration journey between overwintering and breeding grounds.

Explain why this makes them particularly vulnerable to population decline.

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(2 marks)

- 5 (b) Describe how migratory birds may be conserved.

*Quality of Written Communication will be assessed in this answer.*

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(6 marks)

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Turn over ►



6 (a) Suggest **three** environmental conditions which control the growth of photosynthetic organisms in Antarctic waters.

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(3 marks)

6 (b) Explain why, in an investigation into the growth of aquatic photosynthetic organisms, scientists:

6 (b) (i) chose sampling points at random

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.....

(1 mark)

6 (b) (ii) took ten samples at each sampling point.

.....

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(1 mark)

6 (c) The overall species diversity of Antarctica is low.

Describe how the species diversity of an area may be assessed.

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(3 marks)



6 (d) There is concern over the introduction of alien species into fragile ecosystems such as Antarctica.

Explain how introduced species can threaten native wildlife.

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(4 marks)

6 (e) Outline how Antarctica is protected from damaging human activities.

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(3 marks)

**END OF QUESTIONS**

15



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